

List of Claims:

1-32. (previously cancelled)

33. (cancelled)

34. (currently amended) The transgenic plant of Claim 33 ~~84~~, wherein ~~the plant the externally imposed stresses to which the plant is resistant to externally imposed stresses are selected from the group consisting of water deficit and exposure to chilling temperatures.~~

35. (currently amended) The transgenic plant of claim 34, wherein the exposure to chilling temperatures comprises exposure to temperatures as low as ~~10-0°C-10°C~~ for a period of 24 hours or more.

36. (currently amended) The transgenic plant of claim 34, wherein the exposure to chilling temperatures comprises exposure to temperatures below ~~at least as low as 0°C~~ for up to 24 hours.

37. (previously presented) The transgenic plant of claim 34, wherein the exposure to chilling temperatures comprises exposure to temperatures below 0°C for up to 24 hours.

38-40. (cancelled)

41. (currently amended) The transgenic plant of Claim 38 ~~84~~, wherein the AVP1 gene ~~or homolog thereof~~ is operably linked to one or more regulatory elements comprising a chimeric promoter selected from the group consisting of tissue specific promoters, constitutive promoters, inducible promoters and combinations thereof.

42. (previously presented) The transgenic plant of Claim 41, wherein the AVP1 gene is operably linked to one or more regulatory elements comprising a tissue-specific promoter that promotes expression of AVP1 in pollen.

43-45. (cancelled)

46. (withdrawn)

47-50. (cancelled)

51. (currently amended) One or more plant cells ~~of the transgenic plant of claim 84~~ comprising an exogenous nucleic acid that alters expression of vacuolar H⁺ pyrophosphatase in the plant cell.

52-53. (cancelled)

54. (previously presented) The plant cells of Claim 51, wherein the cells are obtained from tissue sources selected from the group consisting of roots, stems, seeds and flowers.

55. (previously presented) The plant cells of Claim 51 wherein the exogenous nucleic acid encodes AVP1.

56-57. (cancelled)

58. (currently amended) A method for increasing production of seeds in plants comprising the steps of:

- (a) providing pollen from a first plant, wherein the first plant is a transgenic plant in accordance with claim 84 has been transformed with exogenous nucleic acid that alters expression of vacuolar pyrophosphatase to create a transgenic plant;
- (b) fertilizing a second plant or the transgenic plant with pollen from the transgenic plant; and
- (c) culturing the fertilized plant until the plant produces an increased number of mature seeds compared with a non-transgenic plant.

59-65. (cancelled)

66. (currently amended) The method of claim 62 58, wherein the a tonoplast pyrophosphate drive H⁺ pump gene is operably linked to one or more regulatory elements comprising a chimeric promoter in the transgenic plant.

67. (previously presented) The method of claim 66, wherein said exogenous tonoplast pyrophosphate driven H⁺ pump gene encodes AVP1.

68-69. (cancelled)

70. (currently amended) The method of claim 64 58, wherein the first and second plants are from the species Nicotinia tabacum or A. thaliana.

71-76. (cancelled)

77. (currently amended) The A transgenic plant of claim 84 with an enhanced capacity to retain solute species in a vacuole of the plant, wherein the plant has been transformed with exogenous nucleic acid that alters expression of vacuolar pyrophosphatase in the plant.

78-83. (cancelled)

84. (new) A transgenic plant having incorporated into its genome a chimeric Na⁺/H⁺ antiporter gene or a chimeric vacuolar pyrophosphatase gene each operably linked to a 35S (CaMV) promoter double tandem enhancer gene that causes overexpression of said gene in said plant.
85. The transgenic plant of claim 84 having incorporated into its genome the chimeric Na⁺/H⁺ antiporter gene.
86. The transgenic plant of claim 85 wherein the antiporter gene is *AtNHX1* that expresses *AtNHX1* protein.
87. The transgenic plant of claim 84 selected from the group consisting of tomato, tobacco, rice, tobacco, sorghum, cucumber, lettuce, turf grass, *Arabidopsis* and corn.
88. A progeny or seed harboring the chimeric antiporter gene from the transgenic plant of claim 77.
89. The transgenic plant of claim 84 having incorporated into its genome the chimeric vacuolar pyrophosphatase gene.
90. The transgenic plant of claim 89 wherein the vacuolar pyrophosphatase gene is a plant or yeast gene.
91. The transgenic plant of claim 90 wherein the vacuolar pyrophosphatase gene is *AVPI*.
92. A progeny or seed harboring the chimeric vacuolar pyrophosphatase gene of the transgenic plant of claim 84.
93. A transgenic plant having incorporated into its genome a chimeric vacuolar pyrophosphatase gene and a Na⁺/H⁺ exchanger gene, each operably linked to a 35S (CaMV) promoter double tandem enhancer gene that causes overexpression of the vacuolar pyrophosphatase gene and the Na⁺/H⁺ exchanger gene in said plant.
94. The transgenic plant of claim 93 wherein the vacuolar pyrophosphatase gene is *AVPI*.
95. The transgenic plant of claim 93 wherein the Na⁺/H⁺exchanger gene is *AtNHX1*.
96. A progeny or seed harboring the vacuolar pyrophosphatase gene and the Na⁺/H⁺ exchanger gene of claim 93.

97. A plant cell from the transgenic plant of claim 93 having incorporated into its genome a chimeric vacuolar pyrophosphatase gene and a Na⁺/H⁺ exchanger gene, each operably linked to a 35S (CaMV) promoter double tandem enhancer gene that causes overexpression of the vacuolar pyrophosphatase gene and the Na⁺/H⁺ exchanger gene in said cell.
98. The transgenic plant of claim 85 wherein the chimeric antiporter gene incorporated into its genome encodes an amino acid sequence selected from the group consisting of SEQ ID NO. 1, SEQ ID NO. 2 and SEQ ID NO. 3.
99. A progeny or seed which incorporates into its genome the chimeric antiporter gene of the transgenic plant of claim 98.
100. The transgenic plant of claim 98 wherein said antiporter gene overexpresses a protein having the amino sequence of SEQ ID NO. 2.
101. The transgenic plant of claim 98 wherein said antiporter gene overexpresses a protein having the sequence of SEQ ID NO. 3.
102. A transformed plant host cell comprising an antiporter gene that encodes a protein having enhanced proton transporter activity in said cell compared to a counterpart unmodified antiporter gene.
103. A method for producing a genetically transformed plant that exhibits salt tolerance to one or more salts selected from the group consisting of NaCl, KCl and CaCl₂, comprising the steps of:
 - a) inserting into the genome of a plant cell a chimeric gene, which comprises
 - i) a DNA sequence encoding an amino acid sequence selected from the group consisting of SEQ ID NO. 1, SEQ ID NO. 2 and SEQ ID NO. 3;
 - ii) a 35S CaMV promoter operably linked to the DNA sequence of step i);
 - iii) a double tandem enhancer of said promoter
 - b) obtaining the transformed plant cells; and
 - c) regenerating a genetically transformed plant from said plant cell wherein said plant exhibits salt tolerance.
104. The genetically transformed plant of claim 96 selected from the group consisting of tomato, tobacco, rice, tobacco, sorghum, cucumber, lettuce, turf grass, Arabidopsis and corn.